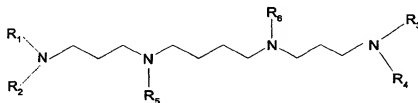


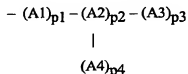
CLAIMS

1. A spermine:peptide-based surfactant compound having the general structure of formula (I):



(I)

where R_1 and R_3 are hydrogen and R_2 and R_4 , which may be the same or different, are peptide groups formed from one or more amino acids linked together, in a linear or branched manner, by amide (CONH) bonds and further linked to the spermine backbone by amide bonds, having the general formula (II):



(II)

where p_1 is 0 to 5 and p_2 is 1 to 5; and the values for p_3 and p_4 , which may be the same or different, are from 0 to 5;

A_1 , A_3 and A_4 , which may be the same or different, are amino acids selected from serine, lysine, ornithine, threonine, histidine, cysteine, arginine and tyrosine; and A_2 is an amino acid selected from lysine, ornithine and histidine;

and R_5 and R_6 are saturated or unsaturated hydrocarbyl groups having up to 24 carbon atoms and linked to the spermine backbone by an amide or an amine (NCH_2) linkage; or

where R_1 and R_3 are hydrogen, R_2 and R_4 , which may be the same or different are saturated or unsaturated hydrocarbyl groups having up to 24 carbon atoms and linked to the

spermine backbone by amide or amine bonds, and R_5 and R_6 , which may be the same or different, are peptide groups of formula (II) linked to the spermine backbone by amide bonds;

or

5 a salt, preferably a pharmaceutically acceptable salt thereof.

2. A spermine:peptide-based surfactant compound according to claim 1 which is symmetrical, that is R_1 and R_3 are the same, R_2 and R_4 are the same, and R_5 and R_6 are the same.

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3. A spermine:peptide-based surfactant compound according to claim 1 or 2 wherein in the peptide group of formula (II) p_1 is 1 and p_2 , p_3 and p_4 are all 0.

4. A spermine:peptide-based surfactant compound according to claim 1 or 2 wherein
15 in the peptide group of formula (II) p_1 and p_2 are both 1 and p_3 and p_4 are both 0.

5. A spermine:peptide-based surfactant compound according to claim 1 or 2 wherein in the peptide group of formula (II) p_1 is 0 and p_2 , p_3 and p_4 are all 1.

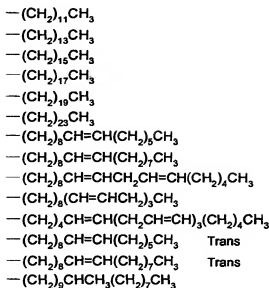
20 6. A spermine:peptide-based surfactant compound according to claim 1 or 2 wherein in the peptide group of formula (II) p_1 and p_3 are 0, p_2 is 1 and p_4 is 2.

7. A spermine:peptide-based surfactant compound according to any one of claims 1 to 6 wherein the A_1 is serine.

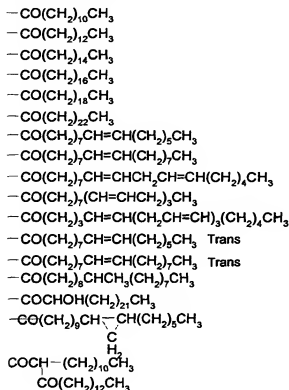
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8. A spermine:peptide-based surfactant compound according to any one of claims 1 to 6 wherein the A_2 is lysine.

9. A spermine:peptide-based surfactant compound according to claim 1 wherein the
30 hydrocarbyl group is selected from:



10. A spermine:peptide-based surfactant compound according to claim 1 wherein the hydrocarbonyl group is selected from:

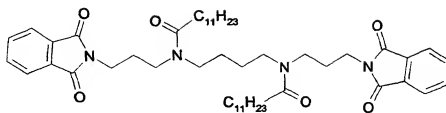


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11. The compound:

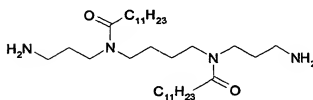
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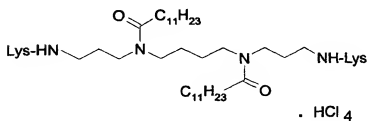


12. The compound:

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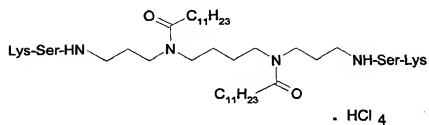


13. The compound GSC1 of formula:



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14. The compound GSC4 of formula:

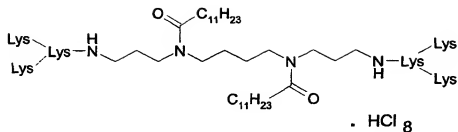


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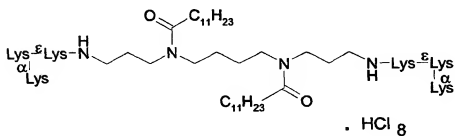
15. The compound GSC40 of formula:

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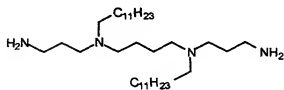


16. The compound GSC42 of formula:



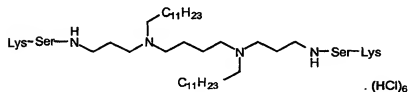
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17. The compound GSC2 of formula:



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18. The compound GSC12 of formula:



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19. The use of a spermine:peptide-based surfactant compound as defined in any one of claims 1 to 15 in facilitating transfection of DNA or RNA polynucleotides or analogs thereof into a eukaryotic or prokaryotic cell *in vivo* or *in vitro*.
- 5 20. The use of a spermine:peptide-based surfactant compound according to claim 19 wherein the compound is used in combination with one or more supplements selected from the group consisting of:
- (i) a neutral carrier; or
- (ii) a complexing reagent.
- 10 21. The use according to claim 20 wherein the neutral carrier is dioleoyl phosphatidylethanolamine (DOPE).
22. The use according to claim 20 wherein the complexing reagent is PLUS reagent.
- 15 23. The use according to claim 20 wherein the complexing reagent is a peptide comprising mainly basic amino acids.
24. The use according to claim 23 wherein the peptide consists of basic amino acids.
- 20 25. The use according to claim 23 or 24 wherein the basic amino acids are selected from lysine and arginine.
26. The use according to claim 24 wherein the peptide is polylysine or polyornithine.
- 25 27. The use according to any one of claims 19 to 26 wherein the oligonucleotides or polynucleotides are transferred into cells to achieve an antisense knock-out effect.
28. The use according to claim 19 wherein the oligonucleotides or polynucleotides are transferred into cells for gene therapy.
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29. The use according to claim 19 wherein the oligonucleotides or polynucleotides are transferred into cells for genetic immunisation (for the generation of antibodies) in whole organisms.
- 5 30. The use according to any one of claims 19 to 26 wherein the oligonucleotides or polynucleotides are transferred into cells in culture.
31. The use of a spermine:peptide-based surfactant compound of any one of claims 1 to 18 to facilitate the transfer of a polynucleotide or an anti-infective compounds into
10 prokaryotic or eukaryotic organism for use in anti-infective therapy.
32. The use of a spermine:peptide-based surfactant compound of any one of claims 1 to 18 to facilitate the adhesion of cells in culture to each other or to a solid or semi-solid surface.
- 15 33. A process for preparing spermine:peptide-based surfactant compounds of claim 1 which process comprises adding amino acids or peptides to a hydrocarbylated spermine backbone.